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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,060	GUIDASH, ROBERT M.	
	Examiner	Art Unit	
	CHRISS S. YODER III	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-21,26-36,41 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-21,26-36,41 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed August 13, 2009 have been fully considered but they are not persuasive.

1. Applicant argues, with respect to claims 5 and 8, that nothing found in Sakurai teaches or suggests the claimed invention, more specifically, nothing teaches or suggests “a color difference readout signal is output when a reset signal and a light signal for one color in a row are stored in at least one column circuit and a reset signal and a light signal for a different color in the same row are stored in the same at least one column circuit.”

To support this assertion, Applicant states that Sakurai generates a difference signal by reading out noise and sensor signals from pixels in two rows. This is clearly shown in figure 6B and described in the description in column 7, line 13 to column 8, line 8. In fact, Sakurai expressly states "only the operation of reading pixels of the first and second rows and first and second columns will be described." (col. 7, lines 13-15). The description after this sentence states the noise signals in the pixels in the first column are read into capacitors C11 and C13 while the noise signals in the pixels in the second column are read into capacitors C21 and C23. (See col. 7, lines 20-27). Thus, the noise signals from the <u>pixels in the first and second rows in the first column</u> are read into capacitors C11 and C13 and the noise signals from the <u>pixels in the first and second rows in the second column</u> are read into capacitors C21 and C23. Later, Sakurai states the sensor signals in the pixels in the first column are read into capacitors C12

and C14 while the sensor signals in the pixels in the second column are read into capacitors C22 and C24. (See col. 7, lines 32-40). Thus, the sensor signals from the pixels in the first and second rows in the first column are read into capacitors C12 and C14 and the sensor signals from the pixels in the first and second rows in the second column are read into capacitors C22 and C24.

However, the Examiner notes that although more than two rows of pixels are used to output a color difference signal, the claim does not limit the color difference output to be the difference of only a single row, and merely states that a color difference is output when the signals (reset and light) of two pixels of different color in the same row are stored in the same column circuit. Therefore, since Sakurai discloses the output of a color difference when the signals (reset and light) of two different color pixels in the same row are stored on the same column circuit (column 9, line 46 – column 10, line 19, and figures 6 and 13), the claimed limitations are met.

2. Applicant argues, with respect to claims 11 and 26, that the combination of Berger and Fossum 2003 does not render Applicant's independent claims 11 and 26 obvious. More specifically, Applicant states that the combination of Berger and Fossum 2003 does not teach or suggest "reading out two or more samples of the same signal from each light receiving element in the at least one row", and "wherein the two or more samples of the same signal are concurrently stored in different individual signal storage elements."

To support this assertion, Applicant states that independent claims 11 and 26 recite "reading out two or more samples of the same signal from each light

receiving element in the at least one row", and "wherein the two or more samples of the same signal are concurrently stored in different individual signal storage elements." And that Fossum 2003, however, uses one register to store signals from a first image capture having a short exposure and uses the other register to store signals from a first image capture having a longer exposure. The signals from the short exposure image capture are different signals from the signals in the long exposure image capture. Unlike Fossum 2003, Applicant's claimed invention stores multiple samples of the same signal (e.g., "two samples of a pixel value in each row of sensor data").

However, the Examiner notes that Fossum discloses that the signal for each light receiving element in each row is **non-destructively sampled** multiple times (i.e., “the same signal from each light receiving element in at least one row" is sample two or more times) in paragraphs 0019-0023. And that Fossum also discloses the use of a storage bank that concurrently stores the two or more samples of the same signal from the at least one row of light receiving elements in different individual signal storage elements within a single storage bank (paragraphs 0019-0023, and figure 1a: 120 and 122; the combination of registers 120 and 122 is considered to be a single storage bank used to store the multiple samples of each pixel).

Additionally, the Examiner notes that although more the two samples taken by Fossum may have different levels, the same signal (i.e., the pixel signal) is sampled multiple times. Therefore, since Fossum discloses storing multiple

samples of the same signal (e.g., "two samples of a pixel value in each row of sensor data"), the claimed limitations are met.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 41 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 41 recites the limitation "at least two storage banks comprised of individual storage elements each of the at least two storage **elements** having enough individual storage elements" in lines 2-4. There is insufficient antecedent basis for this limitation in the claim. The Examiner believes this should be changed to read “at least two storage banks comprised of individual storage elements each of the at least two storage **banks** having enough individual storage elements”. For purposes of examination, the claim will be examined as understood by the Examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 5 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakurai (US Patent 6,784,928).**

5. In regard to **claim 5**, note Sakurai discloses the use of an image sensor comprising a plurality of light receiving elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 5, lines 9-17, and figure 6A), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (figure 8; each pixel has a floating diffusion node), at least one column circuit connected to each column of light receiving elements (column 5, line 66 – column 6, line 17, and figure 7; each of the read out regions above and below the imaging array are each considered to be a column circuit), and a select switch used to control which column circuit a particular signal from a light receiving element is stored (column 5, line 66 – column 8, line 9), wherein a color difference readout signal is output when a reset signal for at least one column circuit is obtained by sampling the signal of one color and the light signal level for that column circuit is obtained by sampling the signal of a different color wherein a color difference readout signal is output when a reset signal and a light signal for one color in a row are stored in at least one column circuit and a reset signal and a light signal for a different color in the same row are stored in the same at least one column circuit

(column 9, line 46 – column 10, line 19; two neighboring pixels in the same row are sampled to the same column circuit, and a color difference signal is output).

6. In regard to **claim 8**, note Sakurai discloses the use of a camera comprising an image sensor comprising a plurality of light receiving elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 5, lines 9-17, and figure 6A), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (figure 8; each pixel has a floating diffusion node), at least one column circuit connected to each column of light receiving elements (column 5, line 66 – column 6, line 17, and figure 7; each of the read out regions above and below the imaging array are each considered to be a column circuit), and a select switch used to control which column circuit a particular signal from a light receiving element is stored (column 5, line 66 – column 8, line 9), wherein a color difference readout signal is output when a reset signal and a light signal for one color in a row are stored in at least one column circuit-and a reset signal and a light signal for a different color in the same row are stored in the same at least one column circuit (column 9, line 46 – column 10, line 19; two neighboring pixels in the same row are sampled to the same column circuit, and a color difference signal is output).

7. **Claims 41 and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Fossum et al. (US Pub. 2003/0117520).**

8. In regard to **claim 41**, note Fossum discloses the use of a method for operating an x-y addressable image sensor (figure 1a: 100) that includes at least two storage banks comprised of individual storage elements each of the at least two storage banks having enough individual storage elements to store signals from at least one row of light receiving elements (paragraph 0019, and figure 1a: 120 and 122; each of the storage banks 120 and 122 have enough storage elements to store signals from at least one row of light receiving elements), the method comprising capturing a single image (paragraphs 0004, 0017, and 0019-0023; a single image is captured by non-destructively sampling the image signal multiple times, wherein the multiple samples are combined to form a single composite image), reading out two or more samples of the same signal for each light receiving element in the at least one row (paragraphs 0019-0023; the signal for each light receiving element in each row is non-destructively sampled multiple times), storing the two or more samples of the same signal in respective storage elements in the at least two storage banks (paragraphs 0019-0023, and figure 1a: 120 and 122; each of the two samples of the same signal are stored in respective elements of each of the storage banks 120 and 122).

9. In regard to **claim 42**, note Fossum discloses that for each light receiving element in the at least one row, reading out the two or more samples of the same signal from the respective storage elements, and averaging the two or more samples to generate a single average signal (paragraphs 0004, 0017, and 0019-0023; each of the respective samples stored in the storage banks are readout and averaged to create a single composite image).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (US Patent 6,784,928) in view of Nam (US Patent 7,408,443).**

11. In regard to **claim 6**, note the primary reference of Sakurai discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 5 above. Therefore, it can be seen that the primary reference fails to explicitly disclose that all of the signals from the light receiving elements that are in the same column with the same colors are transferred to the same column circuit.

In analogous art, Nam discloses that all of the signals from the light receiving elements that are in the same column with the same colors are transferred to the same column circuit (column 5, lines 14-58 and figure 6; all of the green pixels are transferred to upper ADC 611, and all of the red and blue pixels are transferred to lower ADC 612). Nam teaches that the transfer of all of the signals from the light receiving elements that are in the same column with the

same colors to the same column circuit is preferred in order to reduce the fixed pattern noise caused by the spatial difference between the upper and lower column circuits (column 1, lines 60-64, and column 5, lines 54-58). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the transfer of all of the signals from the light receiving elements that are in the same column with the same colors to the same column circuit in order to reduce the fixed pattern noise caused by the spatial difference between the upper and lower column circuits, as suggested by Nam.

12. In regard to **claim 9**, note the primary reference of Sakurai discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 8 above. Therefore, it can be seen that the primary reference fails to explicitly disclose that all of the signals from the light receiving elements that are in the same column with the same colors are transferred to the same column circuit.

In analogous art, Nam discloses that all of the signals from the light receiving elements that are in the same column with the same colors are transferred to the same column circuit (column 5, lines 14-58 and figure 6; all of the green pixels are transferred to upper ADC 611, and all of the red and blue pixels are transferred to lower ADC 612). Nam teaches that the transfer of all of the signals from the light receiving elements that are in the same column with the same colors to the same column circuit is preferred in order to reduce the fixed pattern noise caused by the spatial difference between the upper and lower

column circuits (column 1, lines 60-64, and column 5, lines 54-58). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the transfer of all of the signals from the light receiving elements that are in the same column with the same colors to the same column circuit in order to reduce the fixed pattern noise caused by the spatial difference between the upper and lower column circuits, as suggested by Nam.

13. **Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (US Patent 6,784,928) in view of Nam (US Patent 7,408,443), and further in view of Fossum et al. (US Patent 5,949,483).**

14. In regard to **claim 7**, note the primary reference of Sakurai in view of Nam discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 6 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the averaging of adjacent samples in each column circuit in order to improve

processing time by reducing the amount of data that is output, as suggested by Fossum.

15. In regard to **claim 10**, note primary reference of Sakurai in view of Nam discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 9 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the averaging of adjacent samples in each column circuit in order to improve processing time by reducing the amount of data that is output, as suggested by Fossum.

16. **Claims 11-21 and 26-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (US Patent 4,453,177) in view of Fossum et al. (US Pub. 2003/0117520).**

17. In regard to **claim 11**, note Berger discloses the use of an x-y addressable image sensor comprising a plurality of light receiving elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67

and figure 4a), means for reading out samples of signal from each light receiving element in at least one row (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27, 29, 37 and 39), the at least two storage banks having enough individual storage elements to store the signals from at least one row of light receiving elements in the array (column 7, lines 5-18 and figure 4a: 27, 29, 37 and 39), and at least two select mechanisms which can direct signals from the plurality of light measuring elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49). Therefore, it can be seen that Berger fails to disclose the read out of two or more samples of a same signal from each light receiving element in at least one row, that each of the at least two storage banks has enough individual storage elements to store the two or more signals from the at least one row of light receiving elements in the array, wherein the two or more samples of the same signal are concurrently stored in different individual signal storage elements.

In analogous art, Fossum discloses the read out of two or more samples of a same signal from each light receiving element in at least one row (paragraph 0021), and the use of a storage bank that concurrently stores the two or more samples of the same signal from the at least one row of light receiving elements in different individual signal storage elements within a single storage bank (paragraphs 0019-0023, and figure 1a: 120 and 122; the combination of registers 120 and 122 is considered to be a single storage bank used to store multiple

samples of each pixel). Fossum teaches that concurrently storing two or more samples of each light receiving element in a least one row in different individual signal storage elements within a single storage bank is preferred in order to create a single composite image having extended information content (paragraph 0004). And by replacing each storage bank of Berger with the storage bank of Fossum, each of the storage banks are considered to have enough individual storage elements to store two or more samples of the same signal from at least one row of light receiving elements. Therefore, it would have been obvious to one of ordinary skill in the art to modify Berger to include the read out of two or more samples of a same signal from each light receiving element in at least one row, and such that each of the at least two storage banks has enough individual storage elements to concurrently store the two or more signals from the at least one row of light receiving elements in the array, in order to create a single composite image having extended information content, as suggested by Fossum.

18. In regard to **claim 12**, note Berger discloses that a plurality of color filters mated with the plurality of light receiving elements, and the select mechanism is used to send signals from the light receiving elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

19. In regard to **claim 13**, note Berger discloses that the color filter is a Bayer pattern in which signals from a single color type are sent to only one of the two

signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

20. In regard to **claim 14**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

21. In regard to **claim 15**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

22. In regard to **claim 16**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light receiving elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

23. In regard to **claim 17**, note Berger discloses that a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

24. In regard to **claim 18**, note Fossum discloses that a single pixel can be directed to multiple single storage elements within a signal storage bank (paragraphs 0019-0023), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to multiple single storage elements within any signal storage bank.

25. In regard to **claim 19**, note Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (paragraphs 0004, 0017, and 0019-0023).

26. In regard to **claim 20**, note Fossum discloses that a single pixel can be directed to adjacent individual signal storage elements within a signal storage bank (paragraphs 0019-0023; each pixel is sent to a corresponding storage element in each of the registers 120 and 122), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank.

27. In regard to **claim 21**, note Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (paragraphs 0004, 0017, and 0019-0023).

28. In regard to **claim 26**, note Berger discloses a camera comprising an x-y addressable image sensor comprising a plurality of light receiving elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67 and figure 4a), means for reading out samples of signal from each light receiving element in at least one row (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27, 29, 37 and 39), the at least two storage banks having enough individual storage elements to store the signals from at least one row of light receiving elements in the array (column 7, lines 5-18 and figure 4a: 27, 29, 37 and 39), and at least two

select mechanisms which can direct signals from the plurality of light measuring elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49). Therefore, it can be seen that Berger fails to disclose the read out of two or more samples of a same signal from each light receiving element in at least one row, that each of the at least two storage banks has enough individual storage elements to store the two or more signals from the at least one row of light receiving elements in the array, wherein the two or more samples of the same signal are concurrently stored in different individual signal storage elements.

In analogous art, Fossum discloses the read out of two or more samples of a same signal from each light receiving element in at least one row (paragraph 0021), and the use of a storage bank that concurrently stores the two or more samples of the same signal from the at least one row of light receiving elements in different individual signal storage elements within a single storage bank (paragraphs 0019-0023, and figure 1a: 120 and 122; the combination of registers 120 and 122 is considered to be a single storage bank used to store multiple samples of each pixel). Fossum teaches that concurrently storing two or more samples of each light receiving element in a least one row in different individual signal storage elements within a single storage bank is preferred in order to create a single composite image having extended information content (paragraph 0004). And by replacing each storage bank of Berger with the storage bank of Fossum, each of the storage banks are considered to have enough individual storage elements to store two or more samples of the same signal from at least

one row of light receiving elements. Therefore, it would have been obvious to one of ordinary skill in the art to modify Berger to include the read out of two or more samples of a same signal from each light receiving element in at least one row, and such that each of the at least two storage banks has enough individual storage elements to concurrently store the two or more signals from the at least one row of light receiving elements in the array, in order to create a single composite image having extended information content, as suggested by Fossum.

29. In regard to **claim 27**, note Berger discloses a plurality of color filters mated with the plurality of light receiving elements, and the select mechanism is used to send signals from the light receiving elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

30. In regard to **claim 28**, note Berger discloses that the color filter is a Bayer pattern in which a color of a single type is sent to only one of the two signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

31. In regard to **claim 29**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

32. In regard to **claim 30**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

33. In regard to **claim 31**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light receiving elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

34. In regard to **claim 32**, note Berger discloses a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

35. In regard to **claim 33**, note Fossum discloses that a single pixel can be directed to multiple single storage elements within a signal storage bank (paragraphs 0019-0023), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to multiple single storage elements within any signal storage bank.

36. In regard to **claim 34**, note Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (paragraphs 0004, 0017, and 0019-0023).

37. In regard to **claim 35**, note Fossum discloses that a single pixel can be directed to adjacent individual signal storage elements within a signal storage bank (paragraphs 0019-0023; each pixel is sent to a corresponding storage

element in each of the registers 120 and 122), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank.

38. In regard to **claim 36**, note Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (paragraphs 0004, 0017, and 0019-0023).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISS S. YODER III whose telephone number is (571)272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lin Ye/
Supervisory Patent Examiner, Art Unit 2622

/C. S. Y./
Examiner, Art Unit 2622